

1. 50 points (Diode characteristics)

For the diode 1N4007

- a) obtain a data sheet and attach
- b) Run Spice to obtain I_D versus V_D for $-3V \leq V_D \leq 0.8V$

2. 50 points (transistor biasing)

When only the signal behavior is of interest, often a circuit is shown without the biasing, as per the circuit shown below.

- a) Redraw the circuit to include biasing for both situations of
 - A1) two bias batteries with no additional resistors
 - A2) one battery with added resistors
 - b) Assume $I_C = 5\text{mA}$, $\beta_{\text{forward}} = \beta_F = 80$, forward Early voltage = $V_{AF} = 200$
- .draw the small signal equivalent including r_π , g_m , r_o .

